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ABSTRACT

Five papers in this collection are concerned with the preservation of library materials; the remaining paper addresses library building standards, emphasizing their value and identifying other reports on library standards. The conservation papers cover: (1) training for conservation in Canada, identifying institutions and associations offering related courses; (2) the training of restorers in the German Democratic Republic, reviewing the development of training courses, particularly those relating to art works; (3) national regional activities on the conservation of library materials in the Federal Republic of Germany, including restoration workshops and research on the age-resistant properties of paper; (4) the training of conservators and librarians in the Federal Republic of Germany, focusing on job descriptions, training regulations, and how this subject is treated in library schools and technical colleges; and (5) problems of conservation of modern library materials in the Soviet Union due to insufficient durability of modern machine-made paper and the causes of paper deterioration. (RBF)

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INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS

47th Annual Conference Papers

Management and Technology Division:
Conservation Section

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DIVISION: of Management and Technology

SECTION: Conservation

14/CON/1E

Training for Conservation in Canada

by
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The problem of preserving library materials is one that we all face. It is far easier to define the problem, to apply quantitative measurements to it and to recommend ways of coping with it than it is to actually deal with it. In Canada we have defined it, measured it, recommended solutions and we are increasing our efforts to deal with it.

To deal adequately with the conservation problem in our libraries, it is essential to have sufficient quantitites of properly trained conservation personnel, knowledgeable librarians, adequate technical facilities and of course, money. But the money and facilities mean little if the expertise does not exist to use it. And the expertise will not be required until librarians and others become fully aware of the nature of preservation and conservation and the extent and seriousness of the problem of deteriorating library materials. For this reason, the initial concentration of so-called "training" programs in Canada has been on sensitizing librarians to the problem and to make them aware of the basic techniques of maintenance and handling of library materials.

The Canadian library schools offer both credit and non-credit courses in preservation theory and in conservation techniques. Individual institutions and library associations contribute to the professional literature, present workshops, give demonstrations and use other techniques to make the practicing librarian aware of what measures he or she can take to help curb, or at least delay, the onset of paper deterioration.

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Canada has 7 library schools. Six of them offer courses which deal with the conservation and preservation of library materials. McGill University's Graduate School of Library Science treats the subject of "preservation of materials" in the mandatory "Technical Services" course. As well, McGill also offers an elective course called "Introduction to Archives" which deals with the conservation of writings. As part of the elective "Rare Books Management" course, a private conservator is invited to give a two-hour lecture and demonstration to students each year. The École de bibliothéconomie of the Université de Montréal also offers an elective archives course which deals with the management principles of preservation/conservation. The elective course on "Rare Books and Manuscripts" offered by the Faculty of Library Science, University of Toronto covers "the care of manuscripts and rare book collections", and the University of British Columbia's School of Librarianship offers two elective courses: "Archives and Manuscripts" and "Rare Books and Special Collections" which both deal with the topic.

The two remaining schools, the School of Library and Information Service of the University of Western Ontario and the School of Library Service of Dalhousie University, have developed courses of a more practical orientation. They offer courses which not only teach the philosophy and principles of conservation, but which also permit the student to gain practical experience using the binding and conservation facilities available on-site.

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A course entitled "Conservation and Preservation in Archives" is offered as an elective in the second year of the University of Western Ontario's two-year M.L.S. program. The course covers:

-evaluation of modern conservation techniques;
-study of the physical conditions needed for the proper preservation of archival materials;
-the role of the professional conservator; and
-the problem of ensuring durability and permanence.

The School has an operational printing shop and a bindery which feature conservation and preservation facilities. The equipment in these facilities has been chosen to allow comparison with other locally available equipment, and also to demonstrate the current state-of-the-art in design and function. Students are actively encouraged to use the equipment in the bindery to gain first-hand knowledge and experience in its use.

Dalhousie University's School of Library Service believes in the educational value of practical knowledge of the book arts for library school students. Two voluntary non-credit courses relevant to the conservation of library materials are offered to students. "Conservation of Library Materials" is an introductory course and includes an examination of materials, discussion of preservation techniques and the planning of preventive and restorative programs. The second course, "Hand-binding", allows the student a practical introduction to traditional bookbinding

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techniques. Although it is a non-credit course, students are expected to complete the binding of one book by the end of the course. The Dawson Room of the University Library houses equipment for printing, bookbinding and preservation, and in the future will hopefully house facilities for paper-making. Students of these two courses are allowed full use of the available equipment.

Canadian library schools have recognized the importance of introducing the student librarian to both the principles of preservation and to conservation techniques. The example of practical experience demonstrated by the University of Western Ontario and Dalhousie University is one which should be considered by the others.

The training of practicing librarians and technicians is, for the most part, outside the sphere of responsibility of our library schools. Therefore, the various levels of Canadian library and archives associations (national, provincial and local) and some individual institutions have and continue to actively provide programs aimed at increasing awareness of the preservation problem and of conservation techniques among libraries and archives throughout the country.

In 1978, the Atlantic Provinces Library Association established a Committee on Conservation of Library Materials. In its stated objectives, this Committee has given top priority to the presentation and sponsoring of educational programs dealing with library conservation. To meet this objective, the Committee

has already conducted two successful workshops. In 1979, they presented a workshop on the care of library materials, including slides, lectures and a practical work demonstration. In 1980, a workshop on disaster planning was held. In addition to the workshops, the Committee conducted, in 1979, a survey of conservation activities in the Atlantic region, and intend to use the results as a basis for future programming.

In Québec, the Corporation des bibliothécaires professionels du Québec conducted a workshop in December 1980 on the documentary heritage of Québec, covering such topics as the librarian's responsibility for restoration and conservation and conservation techniques. The Bibliothèque nationale du Québec frequently features conservation articles by senior conservators in its Bulletin de la Bibliothèque nationale du Québec. The Association des Archivistes du Québec includes a section on conservation in the annual reading list published in its journal, Archives.

In Ontario, there are a variety of programs and training offered by various groups. The Public Archives of Canada offers annually 2 four-week courses in archives management (one in English, one in French). One day of each is devoted to conservation with discussion on theory and techniques and a visit to the records and picture conservation areas of the Public Archives. Both the Archives and the National Library provide in-house conservation demonstrations and lectures for staff and for others, including visits to Records Conservation facilities, which are shared jointly by both departments.

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The Council of Federal Libraries (a committee composed of the chief librarians of all federal government libraries) established a Committee on Conservation/Preservation of Library Materials in 1980 to coordinate preservation efforts and activities in the federal library community. The committee presented a workshop for federal librarians in January 1981 on "Preventive Conservation and Library Binding" and included discussions on paper chemistry and deterioration, library binding, and a slide presentation on the care and handling of library materials. In conjunction with this workshop, the Committee published Some Guidelines for Preventive Conservation and Disaster Planning.

The National Library co-sponsored a Colloquium on Conservation and Preservation with the Canadian Association of College and University Libraries at the Canadian Library Association's annual conference in Ottawa in 1979.

The Toronto Area Archivists' Group has sponsored an excellent workshop on paper conservation, and in 1978 published Museum and Archival Supplies Handbook jointly with the Ontario Museum Association.

The Special Collections' staff at the McMaster University Library have organized talks and slide programs for the staff of other libraries as well as community groups and the general public covering the basic maintenance of collections and the general aspects of conservation activities undertaken by the university library. As part of their Co-operative Preservation

Project with other Ontario university libraries, McMaster is planning a workshop for later this year.

In western Canada, there has also been considerable interest demonstrated in the conservation of library materials. The Calgary chapter of the Canadian Association of Special Libraries and Information Services (CASLIS), a division of the Canadian Library Association, held a workshop in 1977 entitled "Identification and Conservation of Rare Materials". The conservation staff of the Glenbow-Alberta Institute also in Calgary, conducts workshops for both librarians and archivists in Alberta. In British Columbia, a private conservator gives demonstrations and tours for students at the School of Library Science of the University of British Columbia.

In all parts of the country, interest and concern is high among librarians and other library staff, and local organizations and institutions have made considerable efforts in organizing awareness programming, using both theoretical and practical approaches to the problem.

The training of conservators and technical conservation personnel presents a different picture. The most critical problem faced by Canadian libraries via-à-vis conservation is the lack of sufficient numbers of qualified personnel trained in book and paper conservation. And what makes this problem even more critical is the virtually complete absence of training facilities in Canada that could provide more qualified conservation personnel.

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A few academic institutions do deal with paper conservation as part of training for other kinds of conservation, namely conservation of fine arts or conservation of museum artifacts. The School of Graduate Studies and Research at Queen's University in Kingston, Ontario offers a course leading to a Master's Degree in Art Conservation, the focus of which is, as the name implies, the conservation of fine art and museum artifacts. Algonquin College of Applied Arts and Technology in Ottawa offers a three-year program for museum technicians, a part of which is devoted to paper conservation. Sheridan College in Oakville, Ontario offers a one-year bookbinding program through its School of Visual Arts. There are four courses in the program: papermaking techniques, bookbinding, equipment construction and the art of the printed book.

The Public Archives of Canada recently initiated an apprenticeship program, whereby persons are hired as apprentices to work in their conservation facilities. Experience in some aspect of conservation or binding is considered an asset in persons applying under this program. At the moment, there are four apprentices in the program, two were hired in fiscal year 1980/81 and two more in 1981/82.

Several other institutions have apprenticeship-like programs. The Glenbow-Alberta Institute in Calgary has for some years now trained its own binding staff through apprenticeship programs. They also permit personnel from other libraries, archives and museums to spend time in their ateliers studying and practicing

elementary conservation measures. McMaster University, in Hamilton, Ontario, has just this year initiated a 5-year technician trainee program, including in-house training in paper repair and handbinding supplemented by visits to other facilities and attendance at short-term courses and workshops. The University is looking into the possibility of obtaining certification for technicians who complete the 5-year program.

Both practical and professional level personnel are urgently required in Canada. The trained conservators that we do have in Canada are, for the most part, either Canadians who have been trained in Europe or Europeans who have been lured to Canada to work. Fewer and fewer are now coming to this country despite an active recruitement program. Higher education is needed for those who will direct conservation programs. Technical training is needed for craftsmen and conservators in various techniques including fine-binding. More apprenticeship programs are needed in those institutions which have fine-binding and conservation facilities and equipment. Until such time as adequate educational and training facilities are established within Canada, we will have to continue to encourage directors of conservation programs to study in Europe. Concurrently with sending senior levels of personnel abroad to study, serious discussions will have to be undertaken with our universities and community colleges to encourage the establishement of professional and technical training programs at home.

It is of interest to note here that the National Library of Canada prepared a position paper in 1980 on a national preservation

program for library materials in Canada, a paper which was presented last year in Manila to the Conference of Directors of National Libraries. Among other issues and concerns outlined in the paper are the short-term problem of insufficient numbers of adequately trained binders and conservators working in Canada and the even more desperate long-term problem of no formal training facilities for such people in the country. Two recommendations were made in regard to conservation training:

1. that the National Library (and other concerned federal institutions) jointly investigate, with members of the library community and representatives of community colleges, the establishing of training programs for paper conservators and binder/conservators;

   and

2. that the National Library make the academic community aware of the problems relating to conservation of library materials, and that the National Library encourage the Association of Universities and Colleges of Canada and the (federal) granting agencies to consider the sponsorship of fellowship programs for study abroad in order to accelerate the training of Canadian directors of conservation programs.

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Throughout Canada, efforts are being made to make librarians and archivists aware of the problems of preservation and to provide practical information on the care and handling of library and archival materials. The library schools, individual institutions and a number of associations offer a wide variety of programs to the student and to the practicing librarian. More and more literature is being generated on the topic by librarians and archivists, and by trained conservators. Exposure to preservation and conservation is given to library school students as part of their formal library science education in the majority of Canadian library schools. Programs for practicing librarians and archivists in the area of preservation and conservation are numerous and quite adequate. Most parts of the country have access to workshops, library literature, demonstrations, etc.

We in Canada have come a long way in the last decade, but there is still more to do. The initial step of creating an awareness of conservation techniques amongst librarians has been firmly made. As more people are sensitized to the urgent conservation needs of our libraries and archives, it is not unrealistic to hope that we <u>will</u> have adequate training opportunities for the skilled professionals and technicians that we so urgently need. When this stage is reached, more funds for salaries and equipment will be needed if we are to succeed in preserving a much larger part of our collective library collections. Without it, our collections will eventually self-destruct and will be lost forever. Let us hope that the skilled personnel,

proper equipment and additional funds that can prevent such a disaster will be forthcoming as more and more librarians and administrators become aware of the urgency of the problem.

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DIVISION: Management and Technology

SECTION: Conservation

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The Training of Restorers in the GDR

by
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Up to now restorators have been - with few exceptions-self-educated persons. The common practice of professional training, courses, practical training, symposia, etc., has given too much attention to individual aspects, has been contradictory to the growing characteristic features of the professional profile of restorators and the increasing level of knowledge. From this point of view it becomes evident that professional training of restorators is highly necessary, though the ideas of its realization differ widely.

The GDR possesses a remarkable national wealth of precioius and old treasures and testimonies of history and culture. In numerous museums, libraries, archives and galleries you may find cultural assets from European and non-European countries as the results of many centuries of research and collecting. According to the cultural-political objectives of our State these treasures as an essential part of our cultural heritage have been preserved, brought into relations to the life and development of the socialist society and have been exploited.

For 35 years we have been working hard in order to rebuild and restore, reorganize and develop the field of preservation of monuments and art treasures. Today we are able to look back at the results of these continuous effeorts which were based upon the far-reaching policy of the Government with a view to developing library and museum affairs, on the permanently increasing financial and material allocations on the basis of the national economic plans and on the will for reconstruction linked with a great deal of individual enthusiasm. Step by step new restoration workshops have been established, traditional ones developed and specialized.

Although the institutional and technical development of workshops has been of great importance the development of restorators' personalities has been decisive for advances in the field of restoration. At present the responsibility of restorators is greater than ever. Looking at part treasures

has not been a privilege of individual persons or strata any longer. Preservation, development and purposeful and vital exploitation of cultural wealth have become one of the main concerns of society.

At first restorators of the GDR were trained at traditional workshops, thoroughly but without uniform regulations. Cooperation with restorators of socialist countries and exchange of experiences have essentially contributed to developing the profile of our restorators.

As far as 1966 a two-year training course for book restorators was started at the Hochschule für Graphik und Buchkunst (Academy of Graphic Arts and Book Art) in Leipzig. In 1968 a training course for restorators of paintings and wooden statues was established at the Kunsthochschule (Academy of Art) in Berlin. The systematic training of restorators of the institutions of preservation of monuments was concluded by certificates of the Ministry of Culture. But the various efforts of different institutions to train restorators were not sufficient in order to solve the urgent problems of training and qualification.

On principle the training of restorators has always been based on the various old traditions of craftmanship, because the great majority of restorators served an apprenticeship before taking up technical education. This aspect will play a major role in this concern, for mastering fundamentals of craftmanship is an essential prerequisite to restorators. On the other hand crafts have been subject to necessary changes in society so that nowadays a lot of traditional work techniques and methods are unknown.

All these aspects which had been influencing the situation up to the mid-70ies formed a remarkable basis for the today's training programmes developed in the GDR. But these programmes have not been completed yet. In this field we also have to be aware of changes influencing an optimum organization of the training.

Apart from the full-time study of five years at the Hochschule für Bildende Künste (Academy of Fine Arts) in Dresden introduced in 1974 there have been eight different training courses for restorators at the Museum für Deutsche Geschichte (Museum for German History) since 1976. The following training courses have been started step by step:

1. Restoration of primeval and primitive cultural assets
2. Restoration of books and cultural assets of paper
3. Restoration of musical instruments
4. Restoration of cultural assets of metal
5. Restoration of archaeological excavations
6. Restoration of cultural assets of textiles
7. Restoration of cultural assets of wood

These training courses providing technical education in correspondence courses with technical college status (Fachschulfernstudium) of four years are supplemented by a full-time study in the special subject "Restoration of architectural design" at the Fachschule für Werbung und Gestaltung (Technical College for Advertising and Design) in Potsdam. By systematically and scientifically training restorators in these special studies the demands of different museums, libraries, archives and other institutions on their staffs can be met.

When organizing the training the most important goal had been to guarantee a uniform, nationally controlled training for the different special studies on the one hand, but on the other hand the differences depending on practice should not be assimilated. Therefore fundamental studies, obligatory for the special studies, are organized on central level at the Museum für Deutsche Geschichte (Museum for German History) in Berlin, whereas the training in specialized subjects is organized on decentral level at consultation centres. Mention must be made of the documents which

have been binding for the training since it was started. The training programmes and curricula were discussed and agreed to by the Scientific Advisory Committee on Museums and approved by the Ministry of Higher Education.

Apart from certain disadvantages correspondence courses also show a great deal of advantages. It has been favourable that the student to be enrolled gained experience during several years of practice guaranteeing a high scientific level of training, since fundamentals of craftmanship, handling of technical equipment have to be trained with some exceptions only. The students are able to make use of the facilities of their workshops where they can make the theoretical knowledge gained in different lectures more solid and apply it to the everyday practice. The unity of lectures and everyday work at the workshop guarantee close links between theory and practice.

At present correspondence courses represent the only actual possibility of organizing the training of restorators on such a large scale in the GDR. However, the necessity of having adequate practical experience before being enrolled faces problems as well. The experiences may be gained during serving an apprenticeship in the respective 'Grundberuf' (basic trade) and the following activities at a restoration workshop. But this kind of training does not run in a straight line and requires more time than full-time studies. Therefore it appears advisable to introduce a new 'Grundberuf' - "Facharbeiter für Restaurierung" (Skilled Worker for Restoration). There have been initiatives with a view to introducing this 'Grundberuf' for a fairly long time.

Correspondence courses have not been possibly only by establishing new training facilities but also by consultation centres at institutions suitable for training. That means, the consultation centre for training in the special subject "Restoration of books and cultural assets of paper" was established at the Deutsches Buch- und Schriftmuseum of the Deutsche Bücherei. This institution has adequate workshops

and experienced staff - scientists and restorators - at its disposal. Practical training and consultations are carried through at the consultation centre, special practical training at laboratories or excursions will be done by cooperating with other educational institutions or firms.

Apart from training documents teaching material had to be worked out when starting the training of restorators. Since the training was introduced five years ago both training instructions for each of the special studies and additional publications have been published, e. g. a German - Russian list of words for activities at museums, technical texts for Russian, a correspondence lesson for introducing restorators into history of art and a textbook on moulding and forming. A textbook on restoration of books and paper will be published this year.

The special subject "Restoration of books and cultural assets of paper" includes the training of book restorators, graphic arts restorators and archive restorators. The different aspects of these special studies will be realized by different special subjects which are compulsory or non-compulsory. The training will be organized according to the demands of the institutions the students come from. For instance, the subjects "Inner block" and "Binding" are compulsory for future book restorators but non-compulsory for graphic arts restorators or archive restorators. It is the intention of this method to train top restorators of high technical education.

According to the training programmes studies consist of fundamental studies, binding for the different courses of training, and of the specialized subjects. The main subjects of fundamental studies, like German, Cultural/Aesthetic Studies, Introduction into Art History or Museology will be completed during the first year. In the following years the number of specialized subjects will be increasing. The last year serves for the most part the preparation and writing of the final paper and the working of the practical 'Beleg-

stücke' (sample completed by the student to qualify). The graduate of a correspondence course is entitled to hold the title "Restaurator" (Restorator).

Every two years students will be enrolled on the basis of the capacity limited by the facilities of the consultation centres; at present they have a maximum of ten students per subject.

In September 1980 the first 40 graduates of correspondence courses got their certificates. Every year another 30 restorators will start work at the museums, libraries and institutions of preservation of monuments.

The last five years have been years of confrontation with the practice. Since there had been less experience in this field of training, something entirely new had to be created. We realize, however, that all problems could not have been solved by this kind of training. It has been introduced in order to fill up gaps of the past and to establish better conditions and facilities in the future.
Even in the near future this training will be adaptable and be developed according to the facilities and demands of our country.

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DIVISION: Management and Technology

SECTION: Conservation

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National and regional activities on conservation of library materials: A Country Report on the Federal Republic of Germany

by
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The current situation in the Federal Republic of Germany is characterised by the influence of the Volkswagen Foundation, which in 1976 was established to sponsor: "The understanding, development and conservation of cultural materials as a task of science". A considerable number of libraries and archives have become involved in this work, and the activities performed may be broadly grouped into two areas.

On the one hand, restoration was started at a number of places which had no earlier practical experience in this field. In some cases, these new workshops will become permanent (University Library of Bremen, Düsseldorf, Münster). In addition, other libraries have undertaken the restoration of individual endangered and particularly precious pieces, without setting aside specialised workshops. In this case, the work is being done by temporary staff or, wherever possible, given out to independent craftsmen. Certainly, it has become clear from this that there is a serious shortage of experienced specialists.

As a parallel activity, a large research project was instigated concerning the age-resistant properties of paper. This work is being jointly undertaken by the State Archive in Bückeburg, the Technical University in Darmstadt and the Bavarian State Library in Munich. The particular work performed in Darmstadt has shown the possibility of changing the morphological structure of cellulose, by use of a swelling agent, in order to reduce age-associated cross-linking. The swelling is able, to a limited extent, to include the crystalline region of the cellulose molecule which is not normally effected by the processes associated with the aging of cellulose. There, it appears to cause a structural loosening which counteracts the aging-associated structural thickening in amorphous areas. Not only can this method be used as a preventative measure, but also as a means of making old paper flexible - so long as it has not already become too brittle. In this sense the newly discovered method is also applicable to restoration. Up to this time, the published method has involved working with Ammonia at a temperature of -50°C. This necessitates an unrealistically high expenditure on apparatus for the present workshops in West Germany. The inventors, therefore, are at present trying to devise a less expensive method which will be patented.

In Munich, the research is centred around optimizing the effectiveness of existing deacidification procedures used in restoration and conservation. It is hoped that the resulting methods may be integrated into other working processes - in particular re-sizing and leaf-casting - without undue expenditure of work. Important factors are: methods of producing earth alkali carbonate under pressure, the question of optimal concentrations and optimal cations. The latter is being considered in the light of other new research findings. It is hoped that the result of the joint research project being carried out in Munich, Darmstadt and Bückeburg will result in the establishment of a standard procedure combining the use of swelling agents, to reduce cross-linking, with the use of earth alkali carbonates, to reduce hydrolysis and oxidation. The increased flexibility produced by swelling agents will be supported by the strength of a film former.

The work performed in Munich endeavours, unlike almost all earlier research into the science of restoration, to bring together all aspects of restorative practice. It will be carried out not with the usual experimental paper, rather with real old paper, needy of restoration and varying greatly in both composition and condition. This principle has necessitated methodical preparations for paper testing and artificial aging, which may constribute to a new refined view of the conservational problem in libraries and considerations as to how they are solved. Such considerations are currently going on in West Germany.

The Gutenberg-Gesellschaft in Mainz is planning, for its next year-book, a series of essays with the participation of papermakers, printers, publishers, booksellers and librarians. From this could develop an alternative to the effort of organizing a multisectional interdisciplinary jargon, which is currently planned by the IFLA, but not yet feasible. To this end, a stock-taking of current understanding and opinions should be performed and an outline of an overall plan to solve the problem be made. It is anticipated that such a solution will require considerable collaboration between papermakers, publishers, librarians, curators and restorers. The stock-taking of information and opinion currently underway in West Germany seems to prove that the technical side of the solution to the problem has advanced further than the economic, common cultural and special library management sides.

As is well known, the creation of a state of awareness is an important factor in the solution of conservational problems in libraries. In a report about the conservation of library materials in West Germany, it has to be emphasized that in 1980/1, the paper industry came forward with an extensive advertising campaign concerning age-resistant paper. In ten different newspapers and magazines a total of seven different double-sided advertisements have appeared and still are appearing. These carry impressive illustrations and engaging text. And these achieve the type of effect of which conference organisers and authors of papers can only dream. Also, a broader effect on publishers, printers, authors and others upon whom the application of age-resistant paper depends and by whom it may be influenced.

One cannot conclude a report about the national or regional activities on conservation and restoration in West Germany without reference to IADA, the international association of archive-, library- and graphic-restorers. This corporate body, which is of course aimed at international membership, concentrates its activities in the German speaking region, especially in the most populous country, namely West Germany. The function of IADA is gradually being extended. One should mention the organisations for further education in practical restoration and the quarterly journal of IADA "Maltechnik-Restaure". It is endeavouring to form a rational register of the whole technical literature of restoration and conservation of materials in libraries, archives and graphic collections. This will enable practising restorers to keep abreast of technical developments purely by reading the bibliography and mean that a literature search will only have to be made when one is faced with or interested in special problems.

The IADA literature has two disadvantages: it appears relatively late, as a rule two years after the reported work, and it is published in German. One hopes that the speaker, who loves his mother tongue very dearly, will be excused if he greatly regrets that the latter is regarded by the world as a disadvantage.

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47. TAGUNG DER IFLA

Tuesday, 18 August, 1981, 11:00 - 12:30

Session 74. Conservation I

Training of conservators and of librarians in the field. Federal Republic of Germany.

Hans J. Becker

NIEDERSÄCHSISCHE STAATS- UND UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN

1 Job description of and training regulations for conservators

1.1 General situation

The situation of conservators in the Federal Republic of Germany ist characterized by a situation which is - compared to many other fields of profession paradoxical in the sense that there are many vacancies, comparatively few conservators, who are trained or still learning, and neither legally acknowledged places of instruction nor a state-recognized professional training resp. a state-recognized job description.

During the past few years the awareness of the necessity of conservation and preservation of books has constantly risen. An indication of this attitude is on the one hand the success of the programme for the preservation of historical cultural values by the "VW Stiftung" (Stiftung=foundation), which took the initiative to set up necessary conservation center in libraries and on the other hand the big interest at meetings and congresses of librarians whenever a lecture on this subject is expected.

Permanent and temporary posts for conservators were created, but it is difficult to find applicants for them. How can this happen, though a continuous training of conservators in technical schools has been argued for for a long time? At the beginning of the seventies in the Federal Republik of Germany two concepts on the question of training were worked out: the so-called "Wolfenbüttel" and the so-called "München" concept, which I shall now describe in short. Unfortunately none of these concepts has been realized so far so that a place of instruction which regulary trains an approppiate number of conservators in still missing.

1.2 Concept of the "Wolfenbüttel" "training regulations for the conservator of books, archives and prints"

In 1974 a plan of elaborated "training regulations" was presented by the conservation center at the "Herzog-August" library in Wolfenbüttel.

This concept provided for an "integrated training for conservators of books, archives and prints" by a coordinated instruction in manufactural and conserving practice und theory. Prerequisite for this training is the General Certificate of Education Ordinary Level, the matriculation examination or a similar graduation. Characteristic of this concept is the parallel training to become a bookbinder and a conservator at one and the same place which partly wants to take the burden of the training off the private booksbinder's shoulders.
In 1979 the proposed training regulations were taken as a basis for the concept of a technical school for the restoration of books. The professional aim "conservator of books" is gained after three years of training in a technical school. The foundation of this technical school was taken into consideration by the responsible ministry. As, however, since 1979 concepts should be worked out at the Federal level as well, the continuation of this project was put off till the presentation of Federal regulations.

1.3 The "München" concept for the training of conservators

In 1973 this concept was presented by Dr. Bansa in his article in the "Bibliotheksforum Bayern". In 1979 a concept for a course for conservators at the planned technical school for conservators in Munich was worked out on the level of the 1973 essay.

The prerequisites were specified:

1. successfully finished training as a bookbinder
2. 6 years having worked as a bookbinder (including training)
3. successfully passing an examination.

Two years of training remained the same and contents remained unchanged as well.

In 1979/80 the Bavarian government set about the foundation of a technical school resp. technical college and a corresponding draft of a bill was presented to the Bavarian diet in order to pass a resolution.

However because of the resistance of the artisans unions it hat not yet been accepted.

1.4 Regulations about the examination for the acknowledged degree "examined conservator"

Since 1977 these has been a commission of the "Deutscher Museumsbund" at work which has cooperated with the Federal minister of education and science and because of the independence in education and cultural matters of the Federal states has been limited to a concept of advanced training and further education.
In spring 1980 the "Deutscher Museumsbund" presented its concepts to the Ministry of education and science

1. regulation about the examination for the acknowledged degree "examined conservator",
2. description of further education for conservators.

At the same time the decree of regulations for further education for conservators and preparators based on § 46, sect. 2 of the "Berufsbildungsgesetz" was brought forward. On grounds of the reactions of unions which were questioned and of the "Kulturministerkonferenz" (conference of the ministers of education), however, it looks as if some time will pass before these decrees will be issued.

1.5 Interim solutions/advanced training and further education

During the long time since the beginning of the seventies till today not only the concepts mentioned above have been formulated. In practice it was necessary to train conservators up to a certain extent in the existing conservation centers.
In addition to this in some of these centers continuation courses took place at irregular intervals as e. g. in Göttingen:

1976 Seminar in microbiology and paper analysis

1977 microbiological working methods in conservation

1979 "International meeting of conservators" as a continuation course

1980 mediaeval book-painting

1981 conservation of photos (twice)

1982 conservation of photos

and at the IBR in Munich

1979 paper analysis

1981 head cap cutting

In Göttingen it is considered to because of a great demand train a small number of book binders to become conservators. The "München" ideas guide this training, i. e. two years of training are planned. A number of the theoretical lessons will be given by experts from university departments resp. from the university library.

2 Domain "conservation, preservation" as a subject of the training of the librarian

2.1 Academic librarian

The three library schools Frankfort, Cologne and Munich gave different answers to this question.

- Frankfort: For the academic librarians the aim solely responsible administration of historical books plays a dominant part. 66 lessons total are used for this purpose;
  a teaching symposium on selected problems of the old and the new book concludes this aspect.
- Cologne: The subject is taken into consideration but there are no special lessons.
- Munich: This domain is treated within the subject "book technique at the most" 12 lessons are provided for this domain.

2.2 "Diplombibliothekar"

Whereas this field is only touched upon at library schools and similarly in the education of the "Diplombibliothekar", it plays a more important but varying part in newly found technical colleges in Frankfort, Hannover and Munich

- Frankfort: The aim of the education of the "Diplombibliothekar" is to train the ability to pass a judgment on a historical book-especially within the scope of consulation. About 20 lessons are provided for this purpose

- Hannover: 1st semester. Unit: technical procedures in the library.

  2st semester. 2 lessons per week-seminar: procedures in bookbinding and in conservation of books whith 36 lessons total (optional obligatory subject).

- Munich:
  1. Part of subject studies (Subj. 9b): binding, printing methods, reprography (30 lessons) - about 3 lessons are explicity devoted to the problem of the conservation of books.
  2. Part of subject studies
     a) lecture on the contemporary science of books and media/book technique. About 4 of these are provided for subjects such as conservation of books and rules of action for catastrophes.
     b) Optional-obligatory seminar "book technique" (10 x 2 lessons)

2.3 Conclusion. Advanced training/further education. There is a common feature of all the different seminars and courses offered: There is no separate course only on the Subject "restoration-conservation", in which the various aspects of this field of study are talked about (apart from the seminars for the "Diplom-bibliothekar" in Hannover and Munich).

There are still missing courses in further education/advanced training in the shape of a course for librarians, especially tailored for their needs and abilities.
Within the IADA there have already been reflections of performing such a course in next year.

3 Conclusion

As well on the field of the training of conservators as mostly in the education of the academic librarian and the "Diplom-bibliothekar" no satisfactory state of affairs with respect to the forthcoming big problems of restoration and conservation have been achieved. The possible solutions outlined above should therefore be pushed forward vigorously in order to improve this situation.

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PROBLEMS OF CONSERVATION OF MODERN LIBRARY MATERIALS CAUSED BY THE LACK OF SUFFICIENT DURABILITY OF MODERN MACHINE-MADE PAPER (CONDITION OF PAPER AND CAUSES OF ITS LOW DURABILITY)

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The statement to the effect that with the development of technique and the improvement of technological processes in paper-making its quality deteriorates from the standpoint of its durability, on the face of it seems paradoxical, but in recent years it has become an axiom for keepers of large libraries and archives. The reason for the considerable drop in the durability of paper of current varieties as compared with old paper lies mainly in the fact that with the growth of paper-making the necessity of using cheap, mass intermediate products has arisen such intermediate products and fibrous materials are wood cellulose and wood pulp.

In the early period of wood-pulp production in Russia aspen wood which yielded a mass , that stably preserved its whiteness, was widely used. With the development of production aspen was succeeded by coniferous wood, mainly spruce timber and though the mass it yields is more yellow it felts much better in the production of the paper sheet.

In the 70 s of the last century sulphite cellulose was introduced. This pulp is produced by boiling wood in an acidic medium and that is why the use of this intermediate product greatly reduces the durability of paper. Approximately at the same time wood pulp, which was still more cheaper, began to be widely used in paper production, and its presence in paper led to the further reduction of its service life, wood pulp is produced by the me-

chanical attrition of wood, which consists of short cells-fibres and the non-fobrous part-lignin, resins, sugar and colouring agents. All this remains.in the wood pulp and when it dries it becomes brittle.

Wood pulp is mainly used for the production of general types of paper, which have a short service life, newsprint paper in particular. By reason of the inadequate mechanical strength of short-fibred wood pulp, in paper production it is used together with cellulose and other kinds of fibres or binders. The total content of cellulose in the composition of such paper does not exceed 20%. Not long ago mainly sulphite cellulose made of softwood was used. Currently softwood is more and more frequently substituted by semi-bleached sulphite cellulose, the flexible fibres of which make the paper more durable and less transparent. Nevertheless, the main fibrous material used is bleached wood pulp. Polygraphic workers are of the opinion that the more wood pulp the newsprint paper contains the better it absorbs printing ink. And as the production of wood pulp is cheaper than that of cellulose it is profitable to use it in the making of newsprint paper.

The production of wood pulp with high physical and mechanical indexes, suitable for the making of high-quality paper, represents a serious problem. As a rule, considerable improvement of the quality of wood pulp is connected with the reduction of the volume of its production. Wood pulp shoud be distinguished by a somewhat increased length of the fine fibre and sufficiently high strength in the humid state; it should also be capable of rapid dewatering. The constancy of phyico-mechanical indexes of wood pulp is a particularly important property. At the presen

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level of wood pulp production the further raising of these indexes is connected with certain technical difficulties. In the 20 th century together with wood pulp products intermediate between cellulose and wood pulp, such as high-yield pulp, semi-cellulose and chemical wood pulp, began to find a wide use. The exhaustion of resources of coniferous forests led to an increased use of leaf wood. The share of leaf wood in the general consumption of wood resources in the world cellulose and paper-making industry increased two-fold in the last 25 years. The proportion of leaf wood in the resources balance of the paper-making industry in the USSR is also gradually increasing; in 1960 it was 1,5%, in 1975 - 11,8% and in 1980 - 17%.

Simultaneously with the growth of consumption of leaf wood, there is a marked tendency to use low-quality wood, timber waste and scrop paper on a rising scale,and in recent years particular attention is being paid to the gatherijg and conversion of scrap paper. The utilization of new technology makes it possible to use it in the production of many conventional types of paper including newsprint paper. In the balance of fibrous materials, scrap paper makes up 10-40 percent.

In view of the fact that the sulphite method of production permits the use of exclusively spruce timber in the last 20 years many large plants, producing sulphite cellulose, have been created in the USSR. The production of neutral sulphite,cellulose, bisulphite cellulose, pulp made of wood chips and other processes, which permit the conversion of all our main varieties of wood, including low-quality wood, leaf timber, larch, annuals, etc., is developing on a wide scale. Because of the shortage of wood resources non-wood plant fibre: straw, reed, bamboo, etc., will

also be used to a considerable degree. With the increase of consumption of fibrous materials and progress of technology of processing of non-wood vegetable resources their role in paper-making will grow. From the viewpoint of the availability of vegetable resources, suitable for prospective use, the USSR possesses the greatest potentials of all countries of the world.

The paper-making industry produces thousands of varieties and sorts of paper for various purposes, but there is no uniform world classification or system of standardization for neither paper, nor intermediate products. In the Soviet Union, State standards have been worked out and papers are divided into 11 classes. Among them are different sorts of printing paper such as newsprint, offset, lithographic, coppe, document chalk overlay, chart paper and many other varieties. Ppers are differentiated by their composition, 1 m^2 mass, smoothness, whiteness, degree of sizing and filling, colour susceptibility and other indexes.

Paper for writing includes writing paper, note paper, ledger paper, cardboard for cards, etc. This sort of paper is characterized by good sizing, slight saturation capacity and fine smoothness.

Paper for printing and writing come in different fibre compositions: unbleached, semi-bleached, bleached high-grade paper with addition of rag semi-pulp. Nevertheless wood pulp is a compulsory component of all papers.

Libraries and archives receive documents and publications mainly printed on the aforementioned varieties of paper. Apart from these papers some other kinds of paper, including technical paper, are used in restoration work. To this category pertain long-stapled papers: tissue paper and micanite paper.

Capacitor paper is also used in restoration. All papers eventually change the indexes of their physico-mechanical and chemical qualities. The preservation of paper depends on the speed with which the process of deterioration proceeds, in other words the slower the process the more durable is the paper. Old hand-made rag papers have proved their durability. In the first decades, following the transition to making paper of wood, little attention was paid to its durability for in its outward appearance it did not practically differ from paper produced earlier. It was only after some time had passed that people noticed that the new paper considerably differed from old paper in its preservation capacity. Paper made of vegetabl fibres is subject to the irreversible ageing process, which proceeds quite rapidly. This process is characterized by the change of the chemical composition of paper and the reduction of it mechanical durability. In comparison with rag papers, printing papers have a high linear deformation and greater dust-catching capacity.

Detorioriation of paper is a complex process the nature of which has not yet been fully discovered. Many variable factors stimulate the dynamics of the ageing process. The durability of paper foremostly depends on inner reasons, which provoke its gradual detorioriation such as the quality of the initial intermediate products, technological conditions of paper-making and production of documents and printed matter. Specialists estimate the life service of 90% of papers produced today to be approximately 50 years. The durability of paper in old books is explained by the fact that it was made manually of pure cotton or linen.

Of considerable importance in the preservation of paper is the quality of materials with which it interacts: printers ink, colours, glue, etc. Their insufficiently high quality affects the life service of publications.

The duration of life of printed matter also depends on the conditions of its storage, the use and influence of other factors: light, temperature and humidity of air and the content in it of gaseous additions.

A particular combination of both internal and external factors favours the acceleration or retardation of the ageing process.

In order to assess the ageing of paper the characteristic of the change of the index of fracture resistance of the paper is used because precisely this index is the most sensitive one. The losses of mechanical durability in the resistance to rupture, tearing and puncturing are insignificant as compared to the appropriate loss in fracture resistance.

In ordinary storage conditions as the paper of books and documents ages processes of destruction of the cellulose set in. These processes are connected with chemical changes, which make themselves known in the decrease of mechanical durability and yellowing owing to the proceeding hydrolytic and oxidizing processes. Hydrolytic processes are provoked by the presence in the fibres of hygroscopic moisture and on account of the influence upon them of remainders of acid products. As a result of the oxidizing processes the acidity of the paper increases, owing to which hydrolytic processes can autocatalyse and the ageing of cellulose in these conditions markedly quickens. The particular importance of acidity of the paper in respect to its durability

can today be considered to be absolutely indisputable.

The accelaration of the process of ageing of vegetable fibres is affected by the enhanced concentration of oxygen in the environment. The increase of the humidity of the environment, when there is a redundancy of oxygen, speeds up this process still mor

Carbonic-acid gas, contained in the air, does not affect the fibres of paper, be it dry or wet. Nevertheless, when affected by ultra-violet rays, the atmosphere of carbonic-acid gas promotes the accelerated ageing of paper.

The absorption by paper of sulphur gas, contained in the air (the air of large industrial cities is particurlarly polluted) is considered to be the main cause of deterioration of paper. This leads to the accumulation of sulphates and free sulphuric acid in paper! Sulphates mainly accumulate on the edges of the sheet, i.e. places of the book to which air has the most easy access. The catalysts of oxidation are ions of metals contained in the paper mass.

The yellowing of paper can be the external manifestation of its ageing. Yellowing of paper is a tern by which the reduction of its whiteness is defined. It takes place owing to the affect of light beams or high temperature. It has been established that the yellowing of paper under the influence of light is provoked by ultra-violet rays with a length of wave up to 500 mmn.

Apart from this, yellowing can take place in the absence of lifht in conditions of usual temperature of the enviromental air, when the vellulose of which paper is made has been poorly washed and coloured substances., dissolved in the water, appress on the surface of the paper.

Yellowing of cellulose can also be observed in those cases

when it is affected by some chemicals, which provoke its destruction. For example, over bleached cellulose shows a considerable loss of whiteness in the process of ageing. The disposition of cellulose to yellowing can be reduced by removing in the process of production of the paper the most damaged small fibres, which contain a low-molecular fraction of mainly resinous substances and substances, which promote the formation of slime during milling. Yellowing of cellulose markedly increases if bleaching is followed by acidification.

Paper containing in its composition a large quantity of wood pulp, in which the oxidation of lignin occurs, is especially liable to yellowing.

The yellowing of paper, which does not contain wood pulp, depends on the presence in it of organic compounds of iron. Many researchers associate the yellowing of paper with chemical changes that eventually take place in rosin, which is used for the sizing of paper. Nevertheless, it is known that in these cases the method of production of rosin represents a substantial factor. The necessity for diligent checking of the quality of sulphur acid aluminia, introduced into the paper mass, is also emphasized.

Besides this, the cleanliness of recycled and fresh trade water used in paper-making must be ensured. The quality of the water was checked even in ancient times when paper was hand-made. There are some indications that first-grade paper was produced, when melted snow was used.

The yellowing of cellulose not so much characterizes the external changes of paper as the transformation of the chemical properties of cellulose and its physico-mechanical indexes. 40

The information we gave on the affect of only a few components of current papers and enviromental factors on paper, mainly on its yellowing, does not fully reveal the complex dependence of the durability of paper on the abundance of variable factors, which stimulate the complex process of ageing. Up till now the process of ageing of paper has not yet been studied profoundly enough and we did not aim to analyse the state of this problem in detail. It should be stressed, however, that regardless of the abundance of data on the subject in special literature, the nature and essence of this process has not yet been studied in detail.

The possibility of creating truly durable paper depends on the depth and fullness of research of the interaction of abundant variable factors.

Attempts to create durable paper were made a number of times, but regardless of this, no satisfactory results followed and this problem cannot be considered to be fully solved. Studies were directed toward the creation of an optimal composition of the paper mass (selection of the right kind of initial fibrous material and composition of components) and the development of the technology of paper-making. Attention was focused on the mechanical strengthening of paper, and considerably less attention was given to its biostability. Practically no studies of the impact of various environmental conditions on new kinds of paper were conducted.

As could be surmised, paper made of cotton cellulose proved to possess the greatest mechanical strength. This is why the creating of durable paper is no great problem when high quality

raw materials are available. Nevertheless, the constantly growing production of paper cannot be provided with the necessary amount of raw cotton. The Soviet Union puts out over 100 mill. copies of newspapers daily and 3 milliard copies of journals annually. Durable paper made of cotton can be produced on a small scale only for special purpose documents and certain kinds of publications. The bulk of printed matter is published on paper made of other fibres.

In this connection investigators aim at finding new methods of producing wood pulp of a higher quality. The proportion of sulphite cellulose production is growing from year to year. At present 67% of cellulose in the world is produced by the sulphite method. Special attention is paid to the quality of initial raw materials. For example, it is a well-known fact that the climate of regions, whence the trees come from, affects the quality of timber. Specialists note that cellulose, produced from northern varieties of coniferous wood, is remarkable for its particular by high durability and other high physico-mechanical properties. Much effort is made to produce high-grade paper of sufficient whiteness. The production of paper for multicolor offset printing of newspapers has been developed. The new variety of paper is more durable than the usual standard sort, it absorbs and fixes colours much better. The production of thin newsprint paper, which permits to turn out a larger amount of paper from the same quantity of fibrous mass, has been launched.

The shortage in some countries of raw materials for the production of paper and the fear that the rapid increase of paper output will lead to the exhaustion of wood resources was one of the reasons for the production of synthetic paper. As compared with conventional paper, the synthetic variety has many advantages.

it has an excellent whiteness, soft lustre; it has wet-strenght, does not raise dust in the process of printing and is susceptible to printing inks. In some countries books, journals, maps, posters, etc. are printed on this paper.

Nevertheless, today synthetic paper is much more expensive than paper made of vegetable fibres because the main varieties of the initial raw materials used for it are products of oil and natural gas refining and coal conversion, the resources of which decline, while their prices are going up and this , accordingly, affects the price of synthetic paper.

The growing output of synthetic paper in a number of countries imposes upon the keepers and restores of library and archives collections the task of investigating the ageing and durability not only of papers made of vegetable fibres, but of new varieties of papers intended both for the printing of publications, received for storage, and for restoration purposes.

A number of institutions in the Soviet Union not only create new varieties of high-grade printing papers, they develop special restoration papers intended for the filling up of lost fragments of sheets of original works and their reinforcement. For the latter purpose, as was mentioned earlier, silk and miconite paper is used. With their help frugality is removed, they enhance the strength of the damaged paper base and make documents more elastic.

In future, with the creation of new varieties of paper, we will have to solve the problem of producing them in quantities, which will make it possible to print the full run of all publications on them. In case this proves impossible, it is necessary 43
to print that part of the run, which is intended for long-term

storage in libraries and archives, on durable paper. This problem can be solved only on the international level since a considerable part of the collections of large national book depositories is made up of foreign publications.

Naturally, the optimal result will entail certain organizational and technical difficulties. Nevertheless, it is impossible to continue the accumulation in libraries and archives of publications potentially not intended for long-term storage. Moreover, there already exists an enormous file of publications of the last century the preservation of which is jeopardized. The proportion of publications printed on undurable paper is continually growing. This process expands on account of the accelerated ageing of paper owing to the polluted atmosphere and intensification of heavy circulation of publications.

That is why, regardless of the creation and production of durable papers it is necessary to clearly determine the optimal parameters of the environment for depositories of libraries and archives, paying particular attention to moisture content and the gas composition of the air.

The current system approach to the solution of practical problems of preservation of books and documents calls for an all-round scientific consideration of all factors acting in the sphere of storage and use of collections. The principle of long-term physical preservation of books can be realized only if these problems are solved on a complex basis.

We must imagine, with a sufficient degree of probability, the behaviuor of materials in certain conditions of storage. And here a far from simple problem of establishing criteria and prognoses emerges. For some aspects this problem is already solved, thus biological fundamentals of the conditions of book

storage and regularities, which make it possible to prognosticate the appearance of mold fungi and insects, have been established.

In library practice methods of conservation, which make it possible to prolong the life of the original, are widely used. They are: neutralization of excessive acidity, absorption and cleaning of various soils, affecting the durability of the paper. In the majority of cases the properties of a document can be restored with the help of artificial and synthetic polymers.

Mutiple augmentation of strenght and durability is achieved when missing parts of paper sheets are restored on a restoration casting machine with the help pf paper mass. Polymers of the vinyl series and organo-silicon compounds are used for the strengthening of paper. The method of restoration and conservation of documents by covering them with a thin polymer film (impregnation) is also becoming more and more popular.

Apparently, prospective problems of conservation do not only cover the preservation of the original itself. The preservation of the information of the original on other material carriers with the aim of ensuring the preservation of the original must also be taken care of. Most probably the vreation of microfilms and microfiches does not represent the one and only solution of this problem. The growth of collections and the development of different forms of their use should be in keeping with the guarantee of durability of documents.

In this way the support of durability of library and archives collections is a functional task not only of keepers and restorers, it is a joint activity of specialists in different fields, beginning with technologists of paper-making, chemists, physicists and biologists and ending with reachers, who use books and documents

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Section: Library Buildings and Equipment

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Standards for Library Building

by

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Standards are an indispensable aid to library authorities and librarians. Standards bring uniformity and order and are also necessary as a guide where new libraries are to be established or existing ones to be improved. They are a guide for the level of financial and material conditions necessary to ensure that libraries will be able to fulfil their responsibilities to the users. Library standards are essential for the planning and evaluation of library services. Standards can vary in degree. They may be either standards of adequacy or standards of excellence. Standards of adequacy in one country may well be standards of excellence in another country. They are sanctioned by authority, concensus or custom. Optimal solutions are only possible by the use of standards, as commerce, technology and industry have already demonstrated.

Whether desirable or not, scholarly libraries are gradually becoming factories of scientific information which they have to produce quickly and reliably, using methods similar to those of conveyor belts. Today all kinds of libraries are caused to carry out rationalization and standardization in order to reach a maximum of capacity with limited personnel. The demands of citizens for education, higher education, professional education

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and information are increasing. To answer these demands is a fundamental function of libraries. Contributing to standardization is therefore one of the most important tasks of the International Federation of Library Associations. A close cooperation with the International Organization for Standardization and the International Federation of Documentation is necessary. For only by making library methods and proceedings uniform, international cooperation will actually be possible. At the IFLA Conference in Frankfurt/Main in 1968 it was resolved to extend the tasks of the Committee on Library Statistics to general library standardization. Until 1952 there had been an IFLA Committee on Standardization which ended its activities in favour of ISO, Technical Committee 46.

The oldest international standard for libraries seems to be the catalogue card of the international format which came from the U.S.A. early in the twentieth century and was officially introduced into Europe much later. In his treatise P. N. Whithers describes standards for all kinds of libraries in different countries and establishes a framework of standards that may be used for developing countries without giving quantitative norms which may be different according to circumstances. The report by R. P. Haritonov, deputy head of the All Union Information Center on Standards and Specification, on the standardization of information and library processing processes in the USSR is of special interest. Let us look for standards for specific types of libraries.

At the IFLA Meeting in Copenhagen in 1969 K. W. Humphreys of the Birmingham University Library tried to give the IFLA Subsection of University Libraries a summary on standards for university libraries in some countries. The figures given by Humphreys are essentially different and can scarcely be used for general comparison. Humphreys himself therefore is pessimistic about the possibility of procuring comparable figures. Indeed, the university systems in various countries

are too different and are based on quite different educational and economic conditions. International standards could be set up under the present circumstances even though only recommendations and ideals and not real national standards exist. However, the situation does not seem as bad as Humphreys thinks. On national levels and using a uniform scheme issued by IFLA, it could be possible to set up certain figures for the purpose. A long period of experiments and hard work are necessary.

Here the activities of the IFLA Section of Public Libraries which have led to clear conceptions should be exemplary. Perhaps we should come to a progressive scale of standards on different developing levels, as already has been suggested for public libraries. The IFLA Standards for Public Libraries include standards for buildings. In view of different conditions in different parts of the world it is of interest to set up a gradation of standards on different developing levels so that each country could use a standard suitable to its own development, one which could be realised.

At the IFLA Meeting in Liverpool 1971 Penelonov reported about standards of public libraries in the USSR. Especially important for the efforts of libraries for standardization is the attempt to find generally acknowledged measurements for library buildings. Since 1967 the IFLA Committee on Library Buildings has been occupied with this problem. First standards for small and medium-sized libraries should be worked out. Furthermore, two publications in which precise explanations have been made are of special importance, a Danish one, edited by Sven Plovgard of the Danish Library Center in Copenhagen, and a German one, edited by Klaus Dietrich Hoffmann of the Arbeitsstelle für Büchereiwesen in Berlin. In his report for the IFLA Conference in Copenhagen in 1969 and in his working paper for the IFLA Session in Moscow these considerations have been continued by Werner Mevissen, finally to reach the phase of a general revision of building standards. In Copenhagen in 1969 Pashchenko and Vinogradov reported with a precise paper on small and medium-sized libraries

in the USSR. This report was supplemented by Pashchenko at the IFLA Conference in Moscow in 1970 with general fundamental explanations on the socio-economic conditions of standards for library buildings. For university libraries two interesting reports were presented at the IFLA Conference in Moscow. Kluth described for the Committee on Library Buildings the efforts made in the Federal Republic of Germany to conceptualize generally acceptable measurements for university library buildings. The other report had been compiled by Harvard-Williams who on behalf of the Subsection of University Libraries and on the basis of a universally distributed questionnaire reported on building measurements of university libraries. He arrives at certain conclusions which are summarized in his report. I am quite sure there are still standardization proposals which have not yet penetrated IFLA at all. I only mention a few by example: The 'Standards of Special Libraries' from the Methodisches Zentrum für Wissenschaftliche Bibliotheken beim Ministerium für Hoch- und Fachschulwesen, Berlin 1973; or the DIN Standard 'Raumbedarf und Lastannahmen für Wissenschaftliche Bibliotheken', published under the direction of Rolf Fuhlrott under the number DIN 31622. In this standard the attempt is made to find out a uniform system for all space allowances by which areas in libraries are fixed. The figures given are not meant to be considered as inalterable, universally valid values, but as variables that are to be calculated or worked out according to varying conditions by means of several formulas and tables. Other examples are the 'Draft for Standards for Public Libraries' from 1975, published by the Kommission für Baufragen, Sektion Öffentliche Bibliotheken, or the most recent and thorough Soviet Standard SNiP II-68-78 for university libraries from 1979.

In preparing building programs librarians in developing countries often are lacking local library standards to work with. In some cases guide-lines may be adopted and adapted from published standards of developed countries. In other areas public library buildings are planned and built according to availability of resources. Singapore, by example, is evolving

its own public library standards. There is a need for developing countries to develop their own library standards adapted to local conditions. Allied to the drawing up of standards would be an awareness of the country's literacy rate, book production and its multi-lingual heritage. The number of books and periodicals that would be made available to readers will to a large extent determine the proposed book capacity of a new library building. Asia, by example, has its share of large metropolitan cities, including Tokyo, Bangkok, Djakarta, Manila, New Delhi. It also has a very sizable rural population. The infrastructure of transport and communications has also to be considered.

In 1973 the IFLA Committee on Statistics and Standards adopted among its resolutions the following: 'It is requested that all IFLA Committees and Sections which have completed work on a standard or a document with standardization components should present such documents through their chairman to the Program Development Group which is to forward this information to the Committee on Statistics and Standardization. The Committee will then, with concern to such documents, consult with other international organizations for further action and consideration as international standards and, if appropriate, forward them to ISO/TC 46 (International Organization for Standardization, Technical Committee 46).'

What are the questions concerning library building standards for the future? Both library standards and system concepts are changing. Several technological break-throughs in the 1970's and the possibility of a national library network in the 1980's based on the new technology make earlier systems, concepts and methods of determining standards questionable. Computerized cataloguing, circulation control and cooperative acquisition coupled with telephone lines make it possible for regional and statewide library groupings to be created without a unified administration or geographic proximity. This opens the possibility of basing local library building programs on

community needs only. Occasional or unusual requests can be handled quickly and effectively by organizing resource networks as, for example, through: distributed data bases that provide for disparate libraries to feed into a common computer bank; distributed processing or circulation and interlibrary loan through remote telephone-interconnected computer terminals; microstorage and transmission; facsimile transmission; truck delivery networks; publicly operated data terminals for querying interlibrary location and status of materials on order as well as presently available with a capability of using a terminal for reserving, interloaning or supplying specific information from data banks. Integrated computer programs will soon be available that will make it possible for a library user to locate books and information in any of a hundred regional or national resources. Within the past decade the library profession has begun to reject arbitrary, professionally oriented standards in favour of a system that derives program-size recommendations from careful analyses of library use and specific community population factors. This new method is particularly appropriate when determining the size of additions to existing buildings and/or renovating buildings to improve the matching of facilities to program.

Benefit to handicapped library users must be the overriding consideration in any discussion of standards, too. Are we really making library facilities accessible to the handicapped? Of course, there are standard specifications for making buildings and facilities accessible to and usable by, the physically handicapped. But there are many problems, too. The circulation desk and other counters in a library cannot be designed at a height acceptable for wheel chairs. The top drawers in card catalogues cannot be used without assistance, and even the book stack areas, if provided with aisles wide enough for easy access for wheel chairs, are at least to one third unusable because of the height of the top shelves and perhaps the bottom shelves, as well. There are many problems coming up in standardization in connection with energy consumption, as there is no alternative

to the widespread application of energy conserving techniques. Future standards will involve the selection of optimum inside environmental conditions. A satisfactory analysis of periodic diurnal and annual thermal loads, the sensible application of thermal insulation, the most effective use of all energy flows available, the selection of the most energy cost-effective control heating systems together with a planned systematic maintainance of not only the conditioning plant and equipment but also the building and its insulating components.

For a few years standards have been in existence concerning the arrangement of working areas. They deal with the functioning of air conditioning plants, a healthy room temperature, questions of line of sight communication with outside, the design of floors, the arrangement of windows which ought to screen off direct sunlight, the sound-level in working areas, etc. Also the stated room dimensions are of importance. Most recently safety standards have also been established for office rooms which should be observed. Other standards deal with sound measurements, ventilation equipments, fire precautions and sound protections. There are special standards for multi-storied buildings: Smoke outlet via ventilation is considered important for obstructing the spreading of fire. It is desirable that in case of fire a smoke-free area near the floor may be obtained. These are all examples of what to look for in standardization of library buildings. I think there is still a lot to do for IFLA's Section for Library Buildings and Equipment.